detecting voice in the signal as a function of the estimated characteristic [pitch comparison].

3. (Amended) The method of claim 1 further comprising estimating power of the signal, and comparing the estimated power of the signal to a [at least one] power threshold, the detection of voice in the signal being further a function of the estimated power comparison.

4. (Amended) The method of claim 3 wherein the power threshold [detection of voice in the signal] is [based on a minimum estimated power] in the range of -45 to -55 dBm.

5. (Amended) The method of claim 1 wherein the characteristic comprises pitch period [the signal pitch period estimation comprises autocorrelating the signal and estimating a pitch period for the autocorrelated signal, the estimated pitch period being a function of the estimated pitch period for the autocorrelated signal].

6. (Amended) The method of claim 5 wherein the detection of voice in the signal is further based on the estimated pitch period of the autocorrelated signal being in the range of 60-400 Hz.

7. (Amended) The method of claim 6 wherein the characteristic comprises amplitude, and the voice detection comprises detecting the [an] amplitude of the autocorrelated signal with one period shift and with no shift, the voice detection being further based on the amplitude of autocorrelated signal with one period shift being in the range of 0.25-0.40 of the amplitude of the autocorrelated signal with no shift.

8. (Amended) The method of claim 6 wherein the characteristic comprises peak amplitude, and the voice detection comprises detecting the [a] peak amplitude of the autocorrelated signal with no shift and with a shift, the detection of voice in the signal being further based on the

peak amplitude of the shifted autocorrelated signal being less than 0.75 to 0.90 of the peak amplitude of the autocorrelated signal with no shift.

A3 cont'd

9. (Amended) A voice detector, comprising:

autocorrelation logic to autocorrelate a signal; and

[a pitch tracker to estimate a pitch period of a signal; and]

frame based decision logic that [compares the estimated pitch period to at least one threshold and] detects voice in the signal as a function of the autocorrelated signal [estimated pitch period comparison].

11. (Amended) The voice detector of claim 9 further comprising a pitch period tracker to estimate a pitch period of the autocorrelated [autocorrelation logic which autocorrelates the signal], and wherein the frame based decision logic detects voice in the signal as a function of the estimated [pitch tracker estimates the] pitch period of the [signal by estimating a pitch period for the] autocorrelated signal.

A3

12. (Amended) The voice detector of claim 11 further comprising a power estimator which estimates power of the signal, and wherein the frame based decision logic further compares the estimated power of the signal to a [at least one] power threshold, the detection of voice in the signal being further a function of the power comparison.

13. (Amended) The voice detector of claim 12 wherein the power threshold [detection of voice in the signal by the frame based decision logic is based on a minimum estimated power] is in the range of -45 to -55 dBm, and the detection of voice in the signal is further based on the estimated power exceeding the power threshold.

14. (Amended) The voice detector of claim 12 wherein the detection of voice in the signal by the frame based decision logic is further based on the estimated pitch period for the autocorrelated signal being in the range of 60-400 Hz.

17. (Amended) A transmission system, comprising:

a telephony device which outputs a signal; and

A4 a voice detector having autocorrelation logic to autocorrelate the signal [a pitch tracker to estimate a pitch period of the signal], and frame based decision logic that [compares the estimated pitch period to at least one threshold and] detects voice in the signal as a function of the autocorrelated signal [estimated pitch comparison].

19. (Amended) The transmission system of claim 17 wherein the voice detector further comprises a pitch period tracker to estimate a pitch period of the autocorrelated [autocorrelation logic which autocorrelates the signal], and wherein the frame based decision logic detects voice in the signal as a function of the estimated [pitch tracker estimates the] pitch period of the [signal by estimating a pitch period for the] autocorrelated signal.

A5

21. (Amended) The transmission system of claim 20 wherein the power threshold [detection of voice in the signal by the frame based decision logic is based on a minimum estimated power] is in the range of -45 to -55 dBm, and the detection of voice in the signal is further based on the estimated power exceeding the power threshold.

A6

22. (Amended) The transmission system of claim 19 wherein the detection of voice in the signal by the frame based decision logic is further based on the estimated pitch period for the autocorrelated signal being in the range of 60-400 Hz.

27. (Amended) A system for processing a signal, comprising:

a voice exchange capable of exchanging voice in the signal between a telephony device and a network;

A7 cont'd a voiceband data exchange capable of exchanging data in the signal between a data device and the network;

a voice detector to detect voice in the signal during the voice band data exchange [having a pitch tracker to estimate a pitch period of the signal, and frame based decision logic that

compares the estimated pitch period to at least one threshold and detects voice in the signal as a function of the estimated pitch comparison]; and

a resource manager which terminates [invokes the voice detector during the voiceband data exchange, the resource manager terminating] the voiceband data exchange and invokes [invoking] the voice exchange when the voice detector detects voice in the signal.

28. (Amended) The signal processing system of claim 85 [27] wherein the signal comprises first, second and third frames, the first frame preceding the second frame in time and the second frame preceding the third frame in time, the voice detector further comprising final decision logic which vacates the detection of voice in the signal for the second frame if voice is not detected by the frame based decision logic for both the first and third frames.

29. (Amended) The signal processing system of claim 85 [27] wherein the voice detector further comprises a pitch period tracker to estimate a pitch period of the autocorrelated [autocorrelation logic which autocorrelates the signal], and wherein the frame based decision logic detects voice in the signal as a function of the estimated [pitch tracker estimates the] pitch period of the [signal by estimating a pitch period for the] autocorrelated signal to a threshold.

30. (Amended) The signal processing system of claim 29 wherein the voice detector further comprises a power estimator which estimates power of the signal, and wherein the frame based decision logic further compares the estimated power of the signal to a [at least one] power threshold, the detection of voice in the signal being further a function of the power comparison.

31. (Amended) The signal processing system of claim 30 wherein the power threshold [detection of voice in the signal by the frame based decision logic is based on a minimum estimated power] is in the range of -45 to -55 dBm, and the detection of voice in the signal is further based on the estimated power exceeding the power threshold.

A7 cont'd

32. (Amended) The signal processing system of claim 29 wherein the detection of voice in the signal by the frame based decision logic is further based on the estimated pitch period for the autocorrelated signal being in the range of 60-400 Hz.

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35. (Amended) A method of processing a signal, comprising:

invoking a data exchange service to exchange data in the signal between a data device and a network;

invoking a voice detection service to detect voice in the signal when the data exchange service is invoked [comprising estimating a pitch period of the signal, comparing the estimated pitch period of the signal to at least one threshold, and detecting voice in the signal as a function of the estimated pitch comparison]; and

terminating the data exchange service and invoking a voice exchange service when the voice detector detects voice in the signal.

A8 cont'd

36. (Amended) The method of claim 86 [35] wherein the signal comprises first, second and third frames, the first frame preceding the second frame in time and the second frame preceding the third frame in time, the voice detector further comprising vacating the detection of voice in the signal for the second frame if voice is not detected by the frame based decision logic for both the first and third frames.

37. (Amended) The method of claim 86 [35] wherein the invoked voice detection service further comprising estimating power of the signal, and comparing the estimated power of the signal to a [at least one] power threshold, the detection of voice in the signal being further a function of the estimated power comparison.

38. (Amended) The method of claim 37 [36] wherein the power threshold [detection of voice in the signal] is [based on a minimum estimated power] in the range of -45 to -55 dBm.

A9 cont'd

39. (Amended) The method of claim 86 [35] wherein the characteristic comprises pitch period [the signal pitch period estimation comprises autocorrelating the signal and estimating a pitch period for the autocorrelated signal, the estimated pitch period being a function of the estimated pitch period for the autocorrelated signal].

41. (Amended) The method of claim 40 wherein the characteristic comprises amplitude, and the invoked voice detection service further comprises detecting the [an] amplitude of the autocorrelated signal with one period shift and with no shift, the detection of voice in the signal being further based on the amplitude of autocorrelated signal with one period shift being in the range of 0.25-0.40 of the amplitude of the autocorrelated signal with no shift.

A10

42. (Amended) The method of claim 40 wherein the characteristic comprises peak amplitude, and the invoked voice detection service comprises detecting the [a] peak amplitude of the autocorrelated signal with no shift and with a shift, the detection of voice in the signal being further based on the peak amplitude of the shifted autocorrelated signal being less than 0.75to 0.90 of the peak amplitude of the autocorrelated signal with no shift.

43. (Amended) Computer-readable media embodying a program of instructions executable by a computer to perform a method of detecting voice in a signal, the method comprising:

autocorrelating the signal;

estimating a characteristic [pitch period] of the autocorrelated signal; and

[comparing the estimated pitch period of the signal to at least one threshold; and]

detecting voice in the signal as a function of the estimated characteristic [pitch comparison].

A11 cont

45. (Amended) The computer-readable media of claim 43 wherein the method further comprises estimating power of the signal, and the estimated power of the signal to a [at least one] power threshold, the detection of voice in the signal being further a function of the estimated power comparison.

46. (Amended) The computer-readable media of claim 35 wherein the power threshold [detection of voice in the signal] is [based on a minimum estimated power] in the range of -45 to -55 dBm.

47. (Amended) The computer-readable media of claim 43 wherein the the characteristic comprises pitch period [the signal pitch period estimation comprises autocorrelating the signal and estimating a pitch period for the autocorrelated signal, the estimated pitch period being a function of the estimated pitch period for the autocorrelated signal].

48. (Amended) The computer-readable media of claim 47 wherein the detection of voice in the signal is further based on the estimated pitch period of the autocorrelated signal being in the range of 60-400 Hz.

All cont

49. (Amended) The computer-readable media of claim 48 wherein the characteristic comprises amplitude, and the voice detection comprises detecting the [an] amplitude of the autocorrelated signal with one period shift and with no shift, the voice detection being further based on the amplitude of autocorrelated signal with one period shift being in the range of 0.25-0.40 of the amplitude of the autocorrelated signal with no shift.

50. (Amended) The computer-readable media of claim 48 wherein the characteristic comprises peak amplitude, and the voice detection comprises detecting the [a] peak amplitude of the autocorrelated signal with no shift and with a shift, the detection of voice in the signal being further based on the peak amplitude of the shifted autocorrelated signal being less than 0.75 to 0.90 of the peak amplitude of the autocorrelated signal with no shift.

51. (Amended) A voice detector, comprising:

autocorrelation means for autocorrelating a signal; and

[pitch estimation means for estimating a pitch period of a signal;

comparison means for comparing the estimated pitch period to at least one threshold; and]

voice detection means for detecting voice in the signal as a function of the autocorrelated signal [estimated pitch period comparison].

53. (Amended) The voice detector of claim 51 further comprising means for estimating a pitch period of the autocorrelated [autocorrelating the] signal, and wherein the voice detection means detects voice in the signal in the signal as a funvtion of the estimated [pitch estimation means estimates the] pitch period of the [signal by estimating a pitch period for the] autocorrelated signal.

54. (Amended) The voice detector of claim 53 further comprising power estimation means for estimating power of the signal, and means for comparing the estimated power of the signal to a [at least one] power threshold, wherein the voice detection means is further adapted to detect voice in the signal as a function of the power comparison.

55. (Amended) The voice detector of claim 54 wherein the power threshold [detection of voice in the signal by the voice detection means is based on a minimum estimated power] is in the range of -45 to -55 dBm, and the detection of voice in the signal is further based on the estimated power exceeding the power threshold.

56. (Amended) The voice detector of claim 53 wherein the detection of voice in the signal by the voice detection means is further based on the estimated pitch period for the autocorrelated signal being in the range of 60-400 Hz.

59. (Amended) A transmission system, comprising:

a telephony device which outputs a signal; and

a voice detector having autocorrelation means for autocorrelating the signal [means for pitch estimation means for estimating a pitch period of the signal, comparison means for comparing the estimated pitch period to at least one threshold], and voice detection means for detecting voice in the signal as a function of the autocorrelated signal [estimated pitch comparison].

61. (Amended) The transmission system of claim 59 wherein the voice detector further comprises estimating a pitch period of the autocorrelated [autocorrelating the signal], and wherein the voice detection means detects voice in the signal as a function of the estimated [pitch estimation means estimates the] pitch period of the [signal by estimating a pitch period for the] autocorrelated signal.

63. (Amended) The transmission system of claim 62 wherein the power threshold [detection of voice in the signal by the voice detection means is based on a minimum estimated power] is in the range of -45 to -55 dBm, and the detection of voice in the signal is further based on the estimated power exceeding the power threshold.

64. (Amended) The transmission system of claim 61 wherein the detection of voice in the signal by the voice detection means is further based on the estimated pitch period for the autocorrelated signal being in the range of 60-400 Hz.

69. (Amended) A system for processing a signal, comprising:

voice means for exchanging voice in the signal between a telephony device and a network;

data means for exchanging data in the signal between a data device and the network;

a voice detector to detect voice in the signal during the data exchange [having pitch estimation means for estimating a pitch period of the signal, comparison means for comparing the

estimated pitch period to at least one threshold, and voice detection means for detecting voice in the signal as a function of the estimated pitch comparison]; and

[invoking] means for [invoking the voice detector during the data exchange, the invoking means] terminating the data exchange and invoking the voice exchange when the voice detector detects voice in the signal.

70. (Amended) The signal processing system of claim 87 [69] wherein the signal comprises first, second and third frames, the first frame preceding the second frame in time and the second frame preceding the third frame in time, the voice detector further comprising means for vacating the detection of voice in the signal for the second frame if the voice detection means does not detect voice for both the first and third frames.

A/6 Cont'd

71. (Amended) The signal processing system of claim 87 [69] wherein the voice detector further comprises means for estimating a pitch period of the autocorrelated [autocorrelating the signal], and wherein the voice detection means detects voice in the signal as a function of the estimated [pitch estimation means estimates the] pitch period of the [signal by estimating a pitch period for the] autocorrelated signal.

73. (Amended) The signal processing system of claim 72 wherein the power threshold [detection of voice in the signal by the voice detection means is based on a minimum estimated power] is in the range of -45 to -55 dBm, and the detection of voice in the signal is further based on the estimated power exceeding the power threshold.

A/7

74. (Amended) The signal processing system of claim 71 wherein the detection of voice in the signal by the voice detection means is further based on the estimated pitch period for the autocorrelated signal being in the range of 60-400 Hz.

77. (Amended) Computer-readable media embodying a program of instructions executable by a computer to perform a method of processing a signal, the method comprising:

invoking a data exchange service to exchange data in the signal between a data device and a network;

invoking a voice detection service to detect voice in the signal when the data exchange service is invoked [comprising estimating a pitch period of the signal, comparing the estimated pitch period of the signal to at least one threshold, and detecting voice in the signal as a function of the estimated pitch comparison]; and

terminating the data exchange service and invoking a voice exchange service when the voice detector detects voice in the signal.

78. (Amended) The computer-readable media of claim 88 77 wherein the signal comprises first, second and third frames, the first frame preceding the second frame in time and the second frame preceding the third frame in time, the voice detector further comprising vacating the detection of voice in the signal for the second frame if voice is not detected by the frame based decision logic for both the first and third frames.

79. (Amended) The method of claim 88 [77] wherein the invoked voice detection service further comprising estimating power of the signal, and comparing the estimated power of the signal to a [at least one] power threshold, the detection of voice in the signal being further a function of the estimated power comparison.

80. (Amended) The computer-readable media of claim 88 [79] wherein the power threshold [detection of voice in the signal] is [based on a minimum estimated power] in the range of -45 to -55 dBm.

81. (Amended) The computer-readable media of claim 88 [77] wherein the characteristic comprises pitch period [the signal pitch period estimation comprises autocorrelating

the signal and estimating a pitch period for the autocorrelated signal, the estimated pitch period being a function of the estimated pitch period for the autocorrelated signal].

82. (Amended) The computer-readable media of claim 81 wherein the detection of voice in the signal is further based on an autocorrelation pitch period in the range of 60-400 Hz.

83. (Amended) The computer-readable media of claim 82 wherein the characteristic comprises amplitude, and the invoked voice detection service further comprises detecting the [an] amplitude of the autocorrelated signal with one period shift and with no shift, the detection of voice in the signal being further based on the amplitude of autocorrelated signal with one period shift being in the range of 0.25-0.40 of the amplitude of the autocorrelated signal with no shift.

A19 CONT

84. (Amended) The computer-readable media of claim 82 wherein the characteristic comprises peak amplitude, and the invoked voice detection service comprises detecting the [a] peak amplitude of the autocorrelated signal with no shift and with a shift, the detection of voice in the signal being further based on the peak amplitude of the shifted autocorrelated signal being less than 0.75to 0.90 of the peak amplitude of the autocorrelated signal with no shift.

Please add the following new claims:

-- 85. The signal processing system of claim 27 wherein the voice detector comprises autocorrelation logic to autocorrelate the signal, and frame based decision logic that detects voice in the signal as a function of the autocorrelated signal. --

A19 CONT

-- 86. The method of claim 35 wherein the invoked voice detection service comprises autocorrelating the signal, estimating a characteristic of the autocorrelated signal; and detecting voice in the signal as a function of the estimated characteristic. --